

Tests reveal under-reported exposure to tobacco smoke among preemies with lung disease

February 24 2015

Public health experts have long known that tobacco smoke exposure (TSE) can be harmful for children with bronchopulmonary dysplasia, a lung disease that often accompanies premature birth.

Now a small study led by Johns Hopkins Children's Center investigators using [hair samples](#) to measure nicotine levels not only affirms that TSE is common in this population, but also reveals significant exposure among children whose caregivers claim not to smoke at home. The findings are published online Feb. 2 in the journal *Pediatrics*.

"We found that more than one-fifth of children whose caregivers report nonsmoking households have significant exposure," says investigator Sharon McGrath-Morrow, M.D., M.B.A., professor of pediatrics and a lung specialist at Johns Hopkins Children's Center. "The hope is that our study will lead to better ways to protect this vulnerable population of children."

McGrath-Morrow says about one-half of children born at less than 1,000 grams, or about 2.2 pounds, develop bronchopulmonary dysplasia. Because these premature infants are particularly sensitive to TSE, which can further damage their already frail lungs, doctors regularly ask caregivers about smoking habits and verify exposure by testing an infant's urine, saliva, or blood for nicotine metabolites. However, says McGrath-Morrow, taking blood samples can be traumatic for young

patients and blood, urine and saliva show only TSE within hours or days, rather than long-term.

Seeking a better marker for TSE, McGrath-Morrow, coauthor Joseph Collaco, M.D., M.B.A., M.P.H., pediatric lung specialist at Johns Hopkins Children's Center, and their colleagues used small locks of hair, which collect evidence of TSE over weeks or months and offer a more accurate picture of a child's smoking environment.

For the study, the researchers collected hair from 117 patients under the age of 3 from the Johns Hopkins' outpatient bronchopulmonary dysplasia clinic, which sees children referred by local neonatal intensive-care clinics and pediatricians. All of the children were seen between January 2012 and January 2014. At the same visit, parents provided answers on two questionnaires that focused on tobacco exposure in the home, including information about which family members smoke and where, the children's' medical, emergency room and hospitalization history, and respiratory symptoms that limit activity.

After combining results from the hair analyses and questionnaires, the researchers found that about 20 percent of the patients had TSE, with nicotine levels in hair increasing with the number of smokers in the household that caregivers self-reported on questionnaires.

However, the study reports, 22 percent of children whose caregivers said lived in nonsmoking households showed significant TSE that was similar to children who did live in smoking households, suggesting that either parents weren't correctly reporting smoking habits or that children were getting TSE elsewhere.

The investigators say some of the children may have been getting exposure in multiunit housing, where about one-half of the study participants lived. The researchers cautioned, however, that this finding

was not statistically significant and may have been due to chance. But they said they observed a trend toward higher nicotine levels in patients of nonsmoking families who lived in multiunit buildings that allowed smoking when compared to those living in buildings that didn't.

Nicotine exposure had a measurable effect on the most vulnerable of these children—the ones who required supplemental oxygen or mechanical ventilation at home. The researchers saw a six to seven-fold uptick in the risk for inpatient hospitalization and activity limitations within this group as the nicotine levels in their hair increased.

McGrath-Morrow notes that although doctors typically educate caregivers on the dangers of TSE in children with bronchopulmonary dysplasia, the new findings show that more must be done to protect this population.

"Tobacco smoke is a modifiable exposure," she says. "If we could prevent TSE in these children, they'd likely have better outcomes."

The new study also highlights the benefits of using hair samples over other methods for assessing TSE, including caregiver reports, which may not always be accurate, says Collaco.

"Although not available for clinical use now, we hope this may be a readily available tool in the future to assess [tobacco smoke exposure](#) in children," he says.

Provided by Johns Hopkins University School of Medicine

Citation: Tests reveal under-reported exposure to tobacco smoke among preemies with lung disease (2015, February 24) retrieved 19 April 2024 from <https://medicalxpress.com/news/2015-02-reveal-under-reported-exposure-tobacco-preemies.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.